WHAT IS CLAIMED IS:

1. A halftone processing apparatus for a laser printer comprising:

a PWM circuit for controlling multi-level tone through laser pulse width modulation (PWM);

a threshold value array for converting a tone value (ni) of an input pixel to a PWM tone value (p) based on a threshold value (nc); and

a PWM correspondence table for associating a PWM tone value (p) to a corresponding laser pulse pattern, wherein:

said PWM tone value (p), when regarded as a bit sequence, comprises a first bit region which has a value determined depending only on a difference value ($\Delta n=ni-nc$) between said input tone value (ni) and said threshold value (nc), and a second bit region which has a value determined depending only on a value represented by said threshold value (nc) excluding four or five lower bits thereof.

2. A halftone processing apparatus for a laser printer according to claim 1, wherein said PWM correspondence table associates some values of said first bit region of said PWM tone value (p) to a corresponding discontinuous pulse pattern as a laser pulse pattern corresponding to said PWM tone value (p) when the value (s1) of said second bit region of said PWM tone value (p) is equal to zero (s1=0); and to a corresponding continuous pulse pattern when said value

s1 is not equal to zero ($s1 \neq 0$), or to a corresponding discontinuous pulse pattern when said value s1 is not equal to zero ($s1 \neq 0$); and to a corresponding continuous pulse pattern when s1 is equal to zero ($s1 = 0$).

3. A halftone processing apparatus for a laser printer according to claim 1, wherein said first bit region of said PWM tone value (p) is determined for said difference value (Δn) and a certain constant integer (d) irrespective of the value represented by the two lower bits or the least significant bit of a value ($\Delta n+d$).

4. A halftone processing apparatus for a laser printer comprising:

a PWM circuit for controlling multi-level halftone through laser pulse width modulation (PWM);

a threshold value array for converting a tone value (ni) of an input pixel to a PWM tone value (p) based on a threshold value (nc); and

a PWM correspondence table for associating said PWM tone value (p) to a corresponding laser pulse pattern, wherein:

said tone processing apparatus further comprises:

registers for holding a threshold value (θ) and an address offset value (p0); and

an adder circuit for adding said address offset value (p0) to said PWM tone value (p), and

said PWM tone value (p) depends only on a

difference ($\Delta n=ni-nc$) between said input tone value (ni) and said threshold value (nc), and simultaneously, said address offset value (p0) is switched on the basis of a comparison of said threshold value (nc) with said threshold value (θ) or a comparison of said tone value (ni) of said input pixel with said threshold value (θ).

5. A halftone processing apparatus for a laser printer according to claim 4, wherein said PWM correspondence table associates laser pulse patterns to some of said PWM tone values (p) such that one of a pulse pattern associated with said PWM tone value (p) and another pulse pattern associated with the sum of said PWM tone value and said address offset value (p+p0) is a discontinuous pulse pattern and the other is a continuous pulse pattern, such that there is such a value p that one of p and p+p0 is discontinuous and the other is continuous.

6. A halftone processing apparatus for a laser printer according to claim 5, wherein said PWM tone value (p) before said address offset value (p0) is added thereto is determined for said difference value (Δn) and a suitable integer constant (d) irrespective of the value represented by the two lower bits or the least significant bit of a value ($\Delta n+d$).

7. A halftone processing apparatus for a laser printer according to claim 3, wherein said PWM tone value (p) for a uniform input sequentially increases as it circulates over four pixels, corresponding to an

increase in the value represented by the two lower bits of said input tone value (ni).

8. A halftone processing apparatus for a laser printer according to claim 3, wherein said laser printer is a color printer which performs multi-color printing through a plane sequential printing process for at least three colors, and comprises said threshold value array for each color plane to switch said threshold value arrays from one color plane to another.

9. A halftone processing apparatus for a laser printer according to claim 6, wherein said PWM tone value (p) for a uniform input sequentially increases as it circulates over four pixels, corresponding to an increase in the value represented by the two lower bits of said input tone value (ni).

10. A halftone processing apparatus for a laser printer according to claim 6, wherein said laser printer is a color printer which performs multi-color printing through a plane sequential printing process for at least three colors, and comprises said threshold value array for each color plane to switch said threshold value arrays from one color plane to another.